THE PENNY MAGAZINE

OF THE

Society for the Diffusion of Useful Knowledge.

147.] PUBLISHED EVERY SATURDAY. [JULY 19, 1834.

THE BISON.

[North American Bison.]

THIS remarkable species of ox is peculiar to North America. Until of late years, it was very generally considered that the domestic ox, the wild bull (*urus*) of Europe and Asia, and the American bison were only varieties of the same species, or, in other words, that the domestic ox was the urus altered by civilization, and that the bison was the urus altered by climate. This was the opinion of Buffon, Pallas, and other distinguished naturalists. The identity of the urus and the bison being assumed, it became a question of somewhat difficult solution how these animals migrated from the old to the new world. Many ingenious theories were framed to meet the circumstances, but the necessity for these speculations has been superseded by the discovery made by Cuvier, that the bison of America is really a species distinct from the urus; and he has indicated the very important differences by which the distinction is established.

We may consider the bison as characterized by fifteen pair of ribs, (the wild bull has only fourteen,) and by the immense disproportion between its fore and hind quarters. The latter distinction is partly occasioned by the great hump or projection over its shoulders. This hump is oblong, diminishing in height as it extends backward, and giving a considerable obliquity to the outline of the back. The hair over the head, neck, and fore part of the body is long and shaggy, forming a beard beneath the lower jaw, and descending below the knee in a tuft. The hair on the summit of the head rises in a dense mass nearly to the tip of the horns, and directly on the front is curled and strongly matted. The ponderous head, rendered terrific by its thick shaggy hair and streaming beard, is supported upon a massive neck and shoulders, the apparent strength of which is more imposing from the augmentation produced by the hump and the long fall of hair by which the anterior parts of the body are covered. This woolly hair is remarkable not less for its fineness than its length. The difference between the winter and the summer coat of the bison consists rather in the length than in the other qualities of the hair. In summer, from the shoulders backward, the surface is covered with very short fine hair, smooth and soft as velvet. Except the long hair on the fore parts, which is to a certain extent of a rust colour or yellowish tinge, the colour is a uniform dun. Varieties of colour are so rare among the species, that the hunters and Indians always regard any apparent difference with great surprise. The fleece or hair of a full-grown bison, when separated from the skin, is usually found to weigh about eight pounds, according to Charlevoix. The horns are shorter than in any other species, nearly straight, sharp-pointed, exceedingly strong, and planted widely asunder at the base, as in the common bull. The tail is almost a foot long, and terminates in a tuft which is black in the males and red in the females. The eyes are large and fierce; the

limbs are of great strength; and the appearance of the animal is altogether exceedingly grim, savage, and formidable. According to Hearne, the size of the bison is, on the average, less than that of the urus, but exceeds that of every other species of the ox. It has been known to weigh 1600 and even 2400 lbs.; and the strongest men are said to be unable, singly, to lift one of the skins from the ground. The female is much smaller than the male; she has not so much of the long hair in front, and her horns are not so large nor so much covered by the hair. The males and females associate from the end of July to the beginning of September; after which the females separate from the males, and remain in distinct herds. They calve in April. The calves seldom leave the mother until they are a year old, and sometimes the females are seen followed by the young of three seasons.

The bisons generally seek their food in the morning and evening, and retire during the heat of the day to marshy places. They rarely resort to the woods, preferring the open prairies where the herbage is long and thick. They also associate in vast troops led by the fiercest and most powerful of the bulls. In both these respects their habits differ from those of the urus, which leads a solitary life in the deepest gloom of the forest. The herds of bisons are frequently of astonishing density and extent. Mr. James says, that in one place at least ten thousand of these fine animals burst upon the sight in an instant. He adds, "In the morning we again sought the living picture, but upon all the plain, which last evening was teeming with noble animals, not one remained." Notwithstanding their terrible aspect, the bison is not an enemy of man, and will never attack him unless when wounded or at bay. During the season in which the males and females associate, and when the passions of the former are in full activity, the noise of the roaring of these immense herds resembles thunder, and the males often fight most desperate battles with each other.

While feeding, they are often scattered over a vast surface; but when they move forward in mass, they form a dense impenetrable column, which once fairly in motion is scarcely to be turned. They swim large rivers nearly in the same order in which they traverse the plains; and when flying from pursuit, it is in vain for those in front to make a sudden halt, as the rearward throng dash madly forward, and force their leaders on. The Indians sometimes profit by this habit. They lure a herd to the vicinity of a precipice, and setting the whole in rapid motion, they terrify them by shouts and other artifices to rush on to their inevitable destruction. The chase of the bisons, indeed, constitutes a favourite diversion of the Indians, numerous tribes of whom may be said to be almost entirely dependent on these animals for all their necessaries of life. They are killed either by shooting them, or by gradually driving them into a small space by setting fire to the grass around the place where the herd is feeding. They are much terrified by fire, and crowd together to avoid it; and they are then killed by bands of Indians without any personal hazard. It is said that, on such occasions, 1500 or 2000 have sometimes been killed at a time.

The flesh of the bison is coarser grained than that of the domestic ox, but is considered by hunters and travellers as superior in tenderness and flavour. That of the males is poor and the flesh disagreeable in the months of August and September. They are much more easily approached and killed than the females, not being so vigilant, but the females are preferred on account of the greater fineness of their skins and more tender flesh. The hump of the bison is highly celebrated for its richness and delicacy, and is said, when properly cooked, to resemble marrow. The Indian method of preparing this delicacy is as follows:—The hump is cut off the shoulders, and a piece of skin is sewed over the severed part. The hair is then singed off, and the whole is ready for the oven. This is a hole in the earth, in and over which a fire has been burned; and into this heated receptacle the hump is conveyed, and covered, about a foot deep, with earth and ashes. A strong fire is again laid over the spot, and, supposing these preparations to have begun on the evening of one day, the hump will be ready for eating by the next day at noon. The tongue and marrow-bones are regarded by the connoisseurs in bisons' flesh to be the parts next in excellence to the hump. The skins of the bisons are of a loose and spongy texture; but when dressed in the Indian manner with the hair on, they make admirable defences against the cold, and may be used for blankets. They are called buffalo robes; the term buffalo being generally, but inaccurately, applied to the bison. The wool of the bison has been manufactured into hats, and has also been employed in making coarse cloth of a very strong and durable texture.

Vast multitudes of bisons are slaughtered every year; and it is to be deeply regretted that the white hunters and traders are in the habit of destroying these valuable beasts in the most wanton and unnecessary manner. It is common for such persons to shoot bisons, even when they have abundance of food, for the sake of the tongue or hump alone; or even for no other reason than because they come near enough to present a fair aim. It is, therefore, not surprising that, from all these causes of diminution, the bisons become less numerous every year, and remove farther and farther from the haunts of men. The numbers of this species still existing are surprisingly great, when we consider the immense destruction of them since European weapons have been employed against them. They were once extensively diffused over what is now the territory of the United States, except that part lying east of the Hudson's River and the lake Champlain, and narrow strips of coast on the Atlantic and Pacific. At the present time their range is very different; they are no longer found except in the remote unsettled regions of the north and west, being rarely seen east of the Mississippi, or south of the St. Lawrence. West of Lake Winnipeg they are found as far north as 62°; west of the Rocky Mountains it is probable they do not extend north of the Columbia river. American authorities assure us that the time cannot be far distant when the bisons, like the Indian tribes which hover near them, will have passed away.

It is stated in the 'Dictionnaire Classique d'Histoire Naturelle,' on the authority of Raffinesque, that the bison is domesticated in the farms of Kentucky and of Ohio. It there associates with the domestic cow, and the mixed breed have the colour, the head, and the shaggy front of the bison; but they are destitute of the hump, although the back is always sloped. They associate indifferently either among themselves or with the bisons and domestic cattle, producing new and fruitful races. The fertility of the cross-breeds does not, however, as Buffon imagined, prove the unity of species in the original parents, for there is scarcely a truth in zoology more evident, than that the bison and domestic ox are of species essentially different. We do not feel sure, however, that this domestication of the bison in Kentucky and Ohio is at present practised, though it might well have been so before the encroachments of man had driven them into the remote regions of the west and north. The 'Encyclopædia Americana,' our obligations to which in preparing this article claim acknowledgment, makes no mention of such a practice.

VEGETABLE ACQUISITIONS.

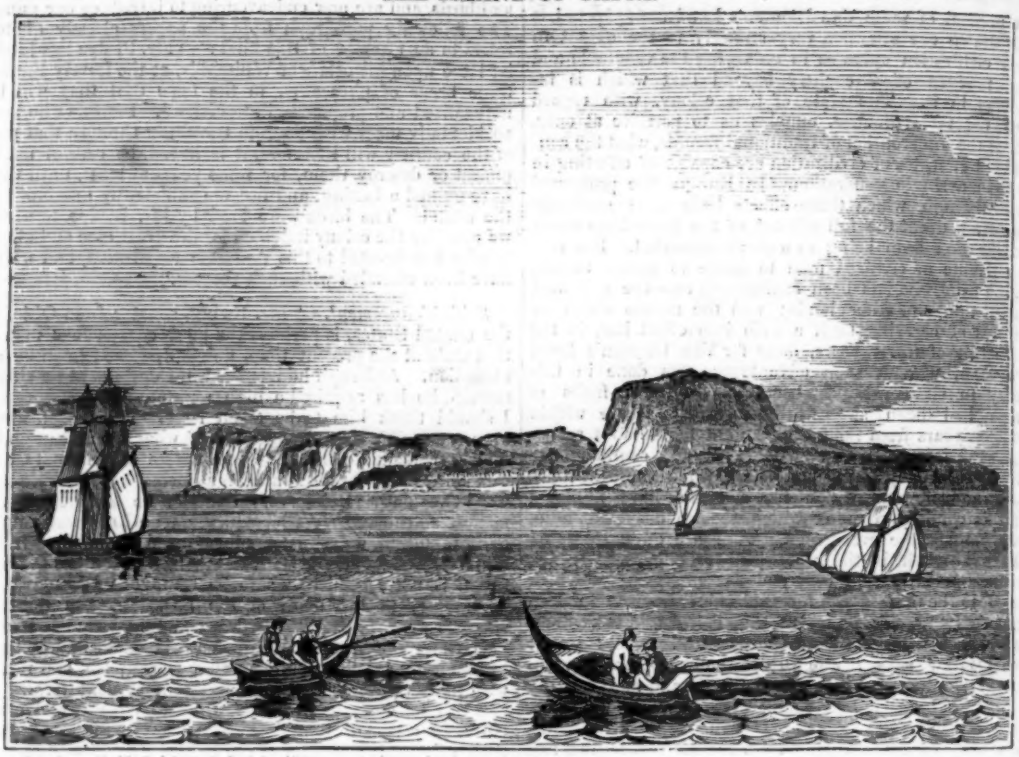
The perusal of some Van Diemen's Land newspapers has lately drawn our attention very strongly to the extent in which civilization operates in enlarging the vegetable and other produce of a country beyond that which is indigenous to it. The state of that colony, with regard to its vegetable produce, enables us to perceive at once, without the intervention of traditional records, what the concentrated energies of civilization are capable of effecting in less than a single generation. In Europe, the prolonged period through which these effects have been gradually obtained, prevent the full efficacy of the immediate power of civilization from being so well apprehended. But it is the attribute of civilized man to desire to gather around him the things he has been accustomed to,—the good and pleasant things of other lands; and the means which he possesses of carrying such a wish into effect has, in the short space of thirty years, done for Van Diemen's Land more than, without such advantages, was done in this country in sixteen hundred. Nearly all the fruits of Europe had been successfully introduced there within seventeen years from the establishment of the first settlement at Risdon Cove; and those of this country have thrived particularly well. The case is the same with trees, shrubs, and flowers, which the colonists have imported from this country, many of which, though deciduous here, have there become evergreens. They are quite sanguine that the same will be the case with the honeysuckle which has been recently sent out, and the prosperity of which appears to be a matter of considerable interest in Van Diemen's Land. And now the colonists begin to reciprocate obligations with the mother-country. The 'Hobart Town Courier' says, "The superintendent of the Government Garden has sent home, in the finest and most healthy condition, 141 specimens, comprising sixty species, with their Linnæan names attached, of our most beautiful plants and shrubs, collected chiefly from Mount Wellington and the banks of the Huon river. They are intended for the Royal Gardens at Kew; and, as they are mostly of a hardy nature, although new to England, we doubt not they will thrive, and be generally admired." The same paper also recommends for exportation to this country the three plants of the genus *Hickea* as being well deserving a general trial for cultivation in England, as a substitute and variation in the hedge-rows which embellish and characterise this country, and expresses a conviction that it would thrive well and be a most desirable acquisition. It is very hardy,—growing among rocks and poor land in the highest and coldest regions of Van Diemen's Land. It is of quick growth, is evergreen, and the leaves being in the form of needles, stiff and pointed, make it an excellent and sufficient fence from man or beast, while the stem is as strong, woody, and rigid as the oak or hawthorn. In return for this kind interest in our behalf, it seems that Van Diemen's Land only desires that we will send out some of the favourite shrubs and flowers, both old and lately introduced, that are yet wanting there, such as the daisy, the violet, lily of the valley, snow-drop, thrift, myrtle, southernwood, guelder-rose, mountain-ash, birch, beech, cedar of Lebanon, laurustinus, and double-flowering plants in general. During the last year, 100,215 quarters of wheat were imported into this country from Van Diemen's Land, being, with one exception, the largest quantity imported from any one country. Within these few months an indigenous species of wheat is stated to have been discovered. Of this discovery the following account has been given in the local papers:—"Mr. Foster, of the Macquarie River, accompanied by his brother and Mr. Bates, has recently completed a tour of the northern and eastern coast of the island, exploring the several rivers from fifteen to twenty miles up their stream. What we look upon as the most interesting result of the journey is the discovery of an indigenous species of wheat, which grows in various parts near the coast to the north of St. Patrick's Head. It was unfortunately only in bloom when Mr. Forster saw it, and no ripe grains could be found from which it could be propagated, which, however, will, we hope, be the case by some future traveller, who may visit that part of the country when the grain is ripe. As this is the first of the cereal order of plants that has been found in Van Diemen's Land, its discovery is well deserving a place in the annals of the colony—unlike the common sorts of wheat, it seems to delight in poor soils, growing luxuriantly in banks of sand and shells." The colonists appear to have been no less successful in the naturalization of zoological than vegetable specimens. They have all our domestic quadrupeds and birds, and are now endeavouring to introduce our game. The following paragraph from the papers already quoted refers to an attempt of this kind:—"Mr. Bisdee has lately let loose upon his estate of Whitehills, at the Lovely Banks, three brace of pheasants, in the hope that they will be naturalized and propagate in the island. Persons who may accidentally meet with them in travelling through that part of the country will therefore, it is hoped, be careful not to molest or destroy them, for some years at least, until they have gained a footing, and become sufficiently numerous in the island. The birds were bred by Mr. Bisdee, to whom we consider the colony indebted for the great care and attention he has devoted to this desirable acquisition, and which have been attended with such success."

Self-Advancement.—"Mr. Ewing, senator from Ohio, in the United States, is perhaps the most conspicuous man of that state at the present time, unless Judge M'Lean be an exception. Although he has been in Congress but a single session, he has acquired a high reputation as a statesman. I should think him to be about forty. He is a self-made man,—a striking exemplification of what a man can do by merely personal effort. He is a native of this state, and was born poor. In his youth his principal employment was wood-chopping. Being very athletic, he excelled in the labours of the axe. At length, when he had grown up to early manhood, a desire for education was awakened in his mind. He directed his steps to this institution, [what institution is not specified,] where he completed his education preparatory to the study of the law. In term time he chopped wood at the college-door; and in vacation it was his custom to swing his axe upon his shoulder and go forth in search of a job, which he would accomplish, and return with fresh vigour at the commencement of next term. In this way he sustained himself while in college, and came out with a constitution as vigorous as when he entered. And now he is a senator of the United States."—*American Annals of Education.*

The Niagara Whirlpool.—This whirlpool, which is several miles below the fall, is one of those scenes which are too grand for description. Instances of accidents happening there can best convey an idea of the horrors of that dreadful abyss. The whirlpool is a large deep basin, in which the waters of the mighty St. Lawrence revolve in one perpetual whirl, caused by their being obstructed by an angle of the steep and dreary banks which overhang this dreadful place. The whirlpool, like the falls, has frequently caused the loss of human life; one instance of which I will here relate:—

"Mr. Wallace, the blacksmith, had a son, a fine youth, of whom he was exceedingly proud, and the lad one day went down to the whirlpool, and the current proving too strong for him, he was carried into the whirl. His poor distracted mother sat on the gloomy bank hours and days, and beheld the body of her own darling child carried round in a circle by the waters, sometimes disappearing for a time, and then coming up and revolving on the surface of his watery grave; and thus continuing for several days, no human aid being available even to obtain his remains. An acquaintance, who resides at the whirlpool, informed me, that in the course of five or six days, bodies which get into this dismal cauldron are carried down the river. It is usual for persons rafting timber from places between the falls and the whirlpool, to get off the raft before they come to the basin, first placing the raft in such a position as may best enable it to float down the stream without being carried into the whirl. On one occasion, however, one of the raftsmen refused to leave the raft—he was not afraid, all would go safe—entreaty was unavailing, and the raft, with the unfortunate, headstrong man upon it, made its way downwards, and was soon drawn within the fatal circle; around which, for three days and three nights, it continued to revolve; all the efforts of a thousand anxious spectators proved unavailing. The continual and sickening motion he underwent robbed the poor sufferer of all power to eat—sleep he could not—a dreadful death was before his eyes, so much the more terrible that it was protracted night after night in such a place. At last a man was found who ventured into the whirl as far as he could with hopes of life, a strong rope being tied round his middle, one end of which was on shore. He carried with him a line to throw to the raft—succeeded; the agonized sufferer fastened it to the raft, and in this way he was drawn on shore, and his life preserved."—*Men and Manners in America.*

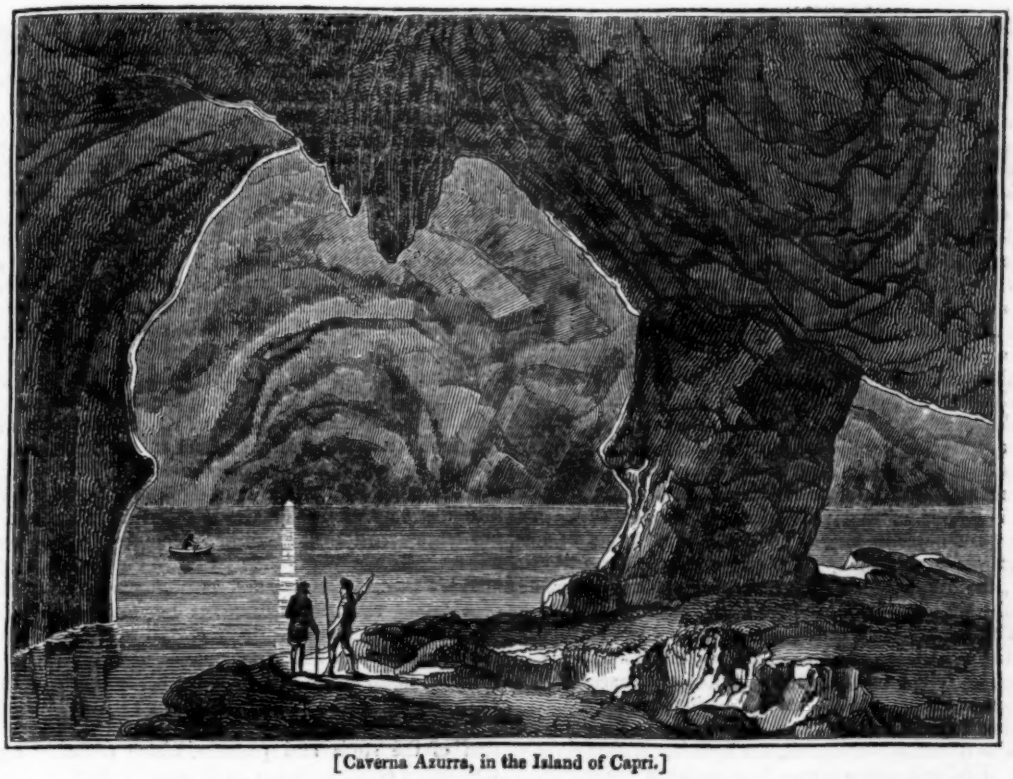
THE ISLAND OF CAPRI.



[Island of Capri.]

THIS most picturesque of islands is situated under the same meridian as the city of Naples, which it immediately faces, and from almost every part of which it is constantly visible. It is, indeed, one of the finest and most striking features of the rich and varied scenery which surrounds that capital. It stands at the entrance of the Neapolitan Gulf, almost on the line of the horizon; it is distant about two miles and a half from Cape Campanella, which terminates the bold promontory where Sorrento, Amalfi, and other towns of old fame, are situated; it is about twelve miles from Cape Miseno on the other side of the bay, and rather more than twenty from the city of Naples at the end of the bay. It is composed of hard, calcareous rocks, which are disposed in two picturesque masses with a considerable break or hollow between them. The highest of these two masses, which is to the west, and is called Anacapri, rises between sixteen and seventeen hundred feet above the level of the sea. The whole of the island, when seen at a little distance, looks so precipitous and inaccessible, that the stranger is disposed to wonder how the little towns and white villages he sees on the face of its cliffs ever got there. The colour of the masses of rock, when not affected by the glow of sunset, is a pale, sober grey. Tracing all the indents and sinuosities of the rocks, the circumference of the island does not exceed nine miles; yet within this narrow space is crowded an astonishing variety of scenic beauties, remains of antiquity, and historical recollections. The entire surface of Capri is wild, broken, and pictureque. The ancient name of the island was Capreæ, and it is said it was so called from being inhabited by wild goats. According to antiquaries, its first human inhabitants were a colony of Greeks from Epirus, who, after many ages, were dispossessed by the citizens of Neapolis (Naples), which then formed part of Magna Græcia, and which, like all the places of note in that portion of Italy, owed its origin to the Greeks. The Roman Emperor Augustus seems to have taken entire possession of the island for himself, and to have given the Neapolitan citizens lands in the neighbouring island of Ischia as an equivalent. Suetonius, the historian, has recorded a visit to Capri made by Augustus at the close of his life. With a shattered constitution and broken spirits, the world's master left Rome to find a place of quiet rest. Having recruited his spirits a little at Astura, on the shores of the Tyrrhenian sea, and near the mouth of the Tyber, he coasted Campania Felix, and, with a few chosen friends, arrived at Baiæ,—the Brighton and the Cheltenham united of ancient Rome. At Baiæ he took shipping for Capreæ. As his galley shot across the Puteolan bay, it was met by a trading vessel from Alexandria in Egypt, the crew of which, aware of the monarch's approach, had dressed themselves in white, and crowned their heads with chaplets; and, when he was still nearer to them, they burned incense before him, swearing to live for him, and for him to navigate the seas. These testimonials of affection, or this adulation, cheered for a moment the dying emperor. He distributed money among his followers, desiring them to spend it in purchasing the Alexandrian merchandize. At Capri, Augustus, determining to forget the cares of government, gave up his whole soul to ease and affable intercourse; but this secession from toil, and the enjoyment of the tranquillity and the balmy atmosphere of the place, and the magical scenery around him, could not restore the old and worn-out man, who died shortly after at the town of Nola in Campania, and almost within sight of the island.

Capri is, however, much more memorable as being the constant retreat for several years of Augustus's successor, the execrable Tiberius. For the honour of human nature, it is to be hoped that those who have described the life and impurities of this systematic tyrant and debauchee have in some instances sacrificed truth to eloquence and effect;—but still enough will remain to excite our abhorrence, and our regret that his name should be associated with so beautiful a spot



[Caverna Azurra, in the Island of Capri.]

of earth. Shut up with the infamous ministers of his tyranny and lust in this rocky, inaccessible island, Tiberius ruled the vast Roman empire. It was here he committed or ordered some of the most atrocious of his cruelties;—it was here he wrote the 'verbose and grand Epistle' to the Senate at Rome, immortalized in its infamy by Juvenal;—it was here the arbiter of the fate of millions trembled in his old age at what might be his own destiny, and sat on "the august rock of Capreæ with a Chaldean band*,"—a band of astrologers and impostors,—to consult the stars. He here built twelve palaces or villas, which were all strongly fortified, and erected many other works, the ruins of which still bear his name. The poor islanders of the present day, indeed, attribute every ancient building or fragment found on the island to "Tiberio Cesare," whom they amusingly call "Emperor of Capri, and King of Rome." It is also very amusing to hear how they talk traditionally of the tyrant, and of the deeds and vices recorded by Tacitus, Suetonius, and Juvenal.

The sail from Naples to Capri on a fine summer evening, when favoured by the *vento di terra*, or land breeze from the main, is one of the most delightful that can be imagined. The only accessible point in the island is called the Sbarco di Capri, or the landing-place. This is below the town of Capri, to which there is an ascent by means of a rude Cyclopean flight of steps, steep and rugged in the extreme. A few fortifications might render the island altogether inaccessible to an enemy, and entitle Capri to the name that was commonly given to it during the last war, viz. the Little Gibraltar. During a certain part of that long struggle, when the French arms had driven the king of the Two Sicilies from Naples to Sicily, the English held the island for that sovereign. We kept possession of it during the whole of the short reign at Naples of Joseph Buonaparte; but when he went to Spain, and Murat replaced him in Italy, it was attacked with an imposing force, and, being most absurdly defended, it fell into the hands of the French.

* Juvenal, Satire X.

The principal town, or, as it is pompously called, the "metropolis of Capri," stands on a shelving rock towards the east of the island. It consists of a group of some two or three hundred small but tolerably neat houses, five or six churches and chapels, with a confined piazza, or square, in the midst. It is surrounded by vineyards and orchards, and some small olive-groves stand on ledges of the cliffs above it. There is only one more town in the island. This is called Anacapri, and is situated high up, on a narrow ledge of the western mass of rock that goes by the same name. The fishermen, sailors, and traders live in the chief town, and the lower parts of the island and Anacapri are almost solely inhabited by frugal, industrious peasants. It is one of the cleanest places that eye can behold. Its inhabitants communicate with the other town and all the east of the island by means of a flight of 538 steps, which zigzags in a curious manner down the face of a precipice. On a still loftier precipice, in the rear of the town of Anacapri, are the picturesque ruins of a castle of the middle ages.

The villages, if groups of three or four vine-dressers' houses may be so called, are nestled here and there in little hollows, or are perched on steps in the cliffs, chiefly on the eastern half of the island. Wherever it has been possible to make them grow, they are surrounded by trees and vineyards. The persevering industry of the islanders is very admirable: by hewing out rocks here,—by piling them up to form terraces and retain the scanty soil there; by removing the earth from places where it was exposed to be washed away, and depositing it in well-defended, secure places, they have covered considerable patches of the northern front of Capri with beauty and fertility. The back of the island is so precipitous that it is altogether impracticable. The cultivable parts produce most kinds of vegetables and fruits, a small quantity of excellent oil, and wine in abundance. The wine, which is well known to all who have resided at Naples, is of two sorts,—Capri rosso and Capri bianco,—or red and white Capri. The quality of both is very good, being devoid

of that volcanic, sulphurous flavour common to most of the wines produced near Naples.

Quails form another important article of export. These birds of passage, which come in countless flights from the coast of Africa in spring, and return thitherward in autumn, are caught on the island in large nets spread out in hollows on the tops of the rocks, through which, season after season, the quails are sure to pass. In some years, as many as 100,000 of these delicate birds, without counting those consumed at home, have been sent to the Neapolitan market. Capri, which is now united to the see of Sorrento, once had a bishop of its own; and, in former days, that dignitary's revenue was derived almost entirely from the trade in quails.

In 1826 the whole population of the island amounted to about 4000 souls. There were two or three schools established by government. The people seemed very healthy, contented, and cheerful; free and equal in their intercourse with one another; and, like most islanders, much attached to the place of their birth. None of them could be called rich, even according to the low scale of that part of the world, but then very few were abjectly poor. Like the inhabitants of the contiguous peninsula, the Sorrentini, the Amalfitani, &c., the people of Capri invariably leave an agreeable recollection in the mind of the traveller.

The bold, perpendicular cliff at the eastern extremity of the island, which is correctly represented in our engraving, is the too celebrated Saltus Caprearum, over which, if history speaks truly, Tiberius was accustomed to have his tortured victims driven. The cliff still retains its name, Italianized, the islanders always calling it "Il Salto," or the leap. It rises seven hundred feet above the level of the sea. Not far from the brow of this cliff are very considerable remains of the Villa Jovis, one of the tyrant's twelve mansions, which all stood on this half of the island. The guides assure the stranger that some arched subterranean chambers, communicating with one another, that are found here, were the *torturing dungeons* of Tiberius. A fine mosaic pavement, some columns of *giallo antico*, a Greek statue of a nymph, with many cameos and intaglios, were found at the Villa Jovis many years since. Indeed, this small island and these Tiberian villas, of which we need not give a minute description, as little remains of them but sub-structures and dismal cells, have contributed largely to modern museums, churches, and palaces. The four magnificent columns of *giallo antico* —and all of one piece—that now decorate the chapel of the King of Naples in the palace of Caserta were dug up in one of the villas. A splendid mosaic, which Murat's wife, Caroline Buonaparte, caused to be removed and laid down as a flooring to her own boudoir in the palace at Portici, was found in another; and each of the villas, from amidst their crumbling ruins, have furnished rosso, giallo, and verde antico,—lapis lazuli, other beautiful stones, and a peculiar sort of marble called Tiberian, in wonderful profusion. Statues and busts in marble and bronze, and of exquisite workmanship—medals and bassi-rilievi, and other objects of art, have also been found and carried away in great quantities during the course of centuries. The mosaics and Corinthian capitals of the Tiberian villas are especially considered as models of perfection of their kind. All these twelve magnificent villas were included in a space, the circumference of which does not exceed four miles. The wealth of the emperor was employed for years in erecting and adorning them.

Since the writer of this short notice was last at Capri, the very curious cavern represented in the engraving has been accidentally discovered. Our description of it is taken from the last edition of Mrs. Starke's 'Guide to Travellers.' The original drawing, made on the spot, from which our engraving is copied, represents the water in the cavern and the stalactites on its roof as being tinged with the most exquisite blue. Hence its Italian name of "Caverna, or Grotta Azurra," or "Caverna Blù"—the Blue Cavern.

"A low-pitched and narrow aperture in the rocks west of the usual landing-place at Capri, and about one mile and a half distant from it, leads into an immense circular cavern, recently discovered—well worth notice, and distinguished by the name of 'La Grotta Azurra.' Persons who visit this sapphire cell are obliged to place themselves horizontally in the little bark destined to convey them through the above low and narrow aperture, which is so small as to excite an alarm of finding darkness within; but, on the contrary, if the day be cloudless, all is light—light that would dazzle were it not blue. The colour of the water which fills the cavern precisely resembles that of the large bottles of vitriol, with lamps behind them, seen at chemists' windows in England; and this water appears to act like the lens of a telescope, by conducting the rays of the sun and the reflection of the brilliant skies of Magna Græcia into the cavern. After the eye has been for a few moments accustomed to a light so magical, the stupendous vaults of this gigantic bath are discernible, richly studded with stalactites, and assuming, in consequence of a strong reflection from the transparent blue water, exactly the same tint. The cavern contains broken steps leading to a subterraneous passage, the length of which is unknown, it being impossible to reach the end, owing to an impediment formed by earth and stones. Masonry seems to have been employed in the construction of the steps and passage, which probably communicated either with one of Tiberius's villas or that of Julia, the niece of Augustus; but the cavern, although it may have been used as a bathing-place, is evidently the work of nature."

THE BOBBIN-NET MANUFACTURE.

IT has seldom happened that the growth of any considerable manufacture has been so rapid that an account could be given of its rise and progress, while the circumstances attending it have been so recent as to be within the personal knowledge of the narrator. The slow progress generally made towards the perfection of such arts may be easily accounted for. The inventor who strives to introduce a new object into use or consumption, must, in many cases, create the want which he offers to gratify, and must awaken the world to a sense of the desirableness or usefulness of the article which he produces. It very often happens, too, that some previously-existing branch of industry, of which he must necessarily avail himself for carrying forward his processes, is not in a sufficiently forward state to afford the full measure of assistance, which, by after improvements, it is rendered capable of yielding. There are, indeed, many inventions which have been lost to the world for a time, and some may even have been altogether consigned to oblivion, for want of that indispensable degree of assistance. The combinations of machinery necessary for the production of Mr. Babbage's calculating machine might have been conceived a century or more ago, since the powers of the human mind were then as great for purposes of invention as they now are, and it cannot be said that the conceptions which have perfected that extraordinary work were awakened by any previous discoveries or inventions of other mechanics or philosophers. But this machine would, at that time, have been invented in vain, and must have remained a fruitless conception in the mind of its author, since the mechanical skill required for its completion, and even the tools necessary for that purpose, did not then exist.

The disadvantageous circumstances here enumerated

have not stood in the way of the manufacture of which we are about to give a short notice. The desire of possessing and using bobbin-net lace had been long before created. Thread and silk lace, for which it has become so extensively a substitute, is a very ancient manufacture, and, although from the tedious and complicated nature of the processes by which it was made, the use of lace was confined to the wealthy, yet that very circumstance may have imparted to it a factitious value, and engendered a stronger desire for its possession than would otherwise have been felt by the more numerous classes. The great improvements effected in the art of spinning cotton had already furnished the material of a quality adapted to the purpose, and all that was wanted for the production of a fabric generally acceptable was the possession of a machine by which the labour employed might be economized, and the price of the manufacture brought within the compass of a larger class.

The invention of the stocking-frame dates from the close of the sixteenth century. About one hundred and fifty years after that frame was invented, it was discovered, by mere accident, that by applying to it another machine as an appendage, and which was called the "tickler machine," the stocking-loops could be removed in certain and various directions, so that the work assumed somewhat the appearance of lace. The net thus produced was, however, deficient in this essential point, that, when unstiffened, it no longer retained the appearance of lace. Notwithstanding this defect, upwards of 20,000 persons were at one time employed in making this net and in ornamenting it with embroidery.

This partial success appears to have acted as a stimulus, and, about the year 1770, many attempts were made to contrive machinery that should more closely imitate the lace made by hand, by twisting and traversing the threads round each other. A machine was at this time brought from Switzerland, and various attempts were made to improve it so as to produce a sort of plat; but this was found to be a slow and imperfect process, and was soon abandoned. Numerous attempts were then made to produce a more perfect mechanism. Winding bobbins with teeth and rolling in other rock-teeth,—threads wound upon wire,—tier upon tier of hooks,—revolving wheels on slides,—and hundreds of other plans, were attempted. By some of these the bobbin-mesh was indeed produced, yet the slowness of the operation, and still more the want of accuracy in the working, prevented the adoption of any one of those inventions.

In this state of things, accident again proved a powerful auxiliary. A workman of Nottingham, employed in making machinery for producing fishing-nets, seized upon a hint furnished by a child at play, and discovered by that means a mode of forming the bobbin and carriage now used in the bobbin-net machine. The invention was applied in the first instance to the production of fishing-nets, and many abortive attempts were made before the principle thus discovered could be applied to the manufacture of bobbin-net lace. It was not until the year 1809 that the first successful machine for this purpose was perfected.

It has generally happened that machines, when newly contrived, have been complex in their arrangements, and that the improvements, of which from time to time they have been the objects, have consisted in simplification, and in the removal of parts which, through the modification of the remainder, are seen to be redundant. The first bobbin-net machine was extremely complicated in its contrivance, and for this reason slow in its operation. It had twenty-four motions to the series for twisting the mesh, and four other motions were required to secure the twist from unravelling. The right to this invention was secured by patent, and proved to be a most successful speculation to those who embarked in it. Before the fourteen years for which the patent was granted had expired, the machine had been so far simplified as to require only thirteen instead of twenty-four motions for completing the mesh, and only two instead of the four motions that had been necessary to secure the twist; and since the invention has become the property of the public by the expiring of the patent, so much ingenuity has been brought to bear upon the construction of the machine, that only six motions are now needed for the production of the mesh, and the two motions then needed for securing the work are now performed simultaneously with the other six. By these means the speed of the machines has been increased twelve-fold, and, in consequence of the greater simplicity of the working, it has been found practicable to propel them by steam and water power. The net produced in the original machines was necessarily limited in its width to one yard and a half, but many frames are now in use which make net four yards wide.

It has also been found possible, by the aid of machinery, to work various ornaments into the net, and means have also been discovered for working the net into slips of various widths,—the original machine having been capable of producing only one plain broad piece. The simplification of the machinery has of course occasioned a reduction in the cost of producing the manufacture; but the profits of the possessors of the patent must, notwithstanding, have been ample, since they were enabled to take advantage of the desire of the public to purchase their fabric to such a degree as to sell for five guineas that which may now be purchased for half-a-crown!—a fact which will not be thought so extraordinary when it is known that more than one-half of the bobbin-net lace, now made, is sold by the manufacturers as low as one shilling for a square yard, the highest price of plain net of the best quality being only eighteenpence per square yard: ornamented goods are of course sold higher.

We are induced to add a few particulars to the foregoing sketch, in order to show the importance of this manufacture in a national point of view. The statements may be relied on as substantially correct, having been drawn out by a gentleman intimately acquainted with every part of the manufacture, and approved by other persons equally capable of judging as to their correctness.

The population of Nottingham, Lenton, Beeston, Radford, Barford, Arnold, and Snenton, when the bobbin-net manufacture was commenced, in 1811, amounted to 47,300; at the last census (in 1831) it was rather above 80,000. It is computed that the number of persons, including children, employed in spinning and doubling the yarn used for this manufacture, is 13,000. Of men, women, and children, employed in *power* net-making, there are 3000. In *hand*-machine making, nearly all of whom are men, 5000. In winding, which is done by children at their homes, 4000. In mending, done by women and children at home, 6000. Total, 31,000. It is further computed that 100,000 women and children obtain a living, or at least assist toward their maintenance, by embroidering bobbin-net lace. This is a principal employment in almost every village for a considerable distance round Nottingham; and it is also followed, to a large extent, in the counties of Devon, Somerset, and Norfolk, as well as in Glasgow, in London, and in some parts of Ireland. The number here mentioned is, however, probably overstated.

The annual consumption of raw cotton, for this manufacture, is stated to be about 2,400,000 lbs. weight, the value of which, including the labour bestowed upon it

for its conversion into yarn suited to the manufacture, is 635,000*l.* A small quantity of silk is also used annually, and the value of this, when it comes from the throwing mills, is stated at 10,000*l.* From these materials are produced:—

Yards.		s. d.		£.
5,645,000	of hand-lever quilling net,	at 1 3	per sq. yd.	352,815
2,207,000	hand-circular quilling net,	"		137,935
6,622,000	hand-circular plain net,	1 6		496,650
4,580,000	hand-rotary plain net,	1 0		229,000
10,905,000	power plain net,	"		545,250
562,000	fancy net,	2 6		70,250
250,000	silk net,	1 6		18,750
30,771,000	square yards, of the value of	. .		£1,850,650

About three-fourths of these quantities are annually exported, and chiefly in the plain state. The Americans are large customers; a good deal is sent to the north of Europe, and more considerable quantities to Belgium, whence, it is said, a large proportion is smuggled across the frontier into France.

The fixed capital embarked in this branch of industry, within the kingdom, is computed at very little short of two millions, including the present value of five thousand machines of various sizes now at work. A large proportion of these machines having been constructed without the recent improvements, their exchangeable value has been so far reduced by the less expensive and more efficient ones now made, that what has cost the original owners nearly two millions cannot now be estimated at more than 200,000*l.* Eight machines, which cost 5000*l.* in 1825, were sold in 1833 for 300*l.* Five hundred machines of the best construction, costing 100,000*l.*, have been made and put to work in 1832 and 1833. It affords a strong proof that the manufacture is still progressively increasing, that, notwithstanding this rapid addition of improved machinery, the old contrivances continue to be employed. There are not any old machines, in a sufficient state of repair to be capable of producing good work, which are now standing idle. Their saleable value is reduced, both because the more simple machines of modern make may be put together for one-third their cost, and because these latter can be worked more profitably, and require a less application of labour for the production of an equal effect.

Within the last ten years, the bobbin-net manufacture has been undertaken on the Continent. It was computed that, in August, 1833, there were 1850 machines in use there, producing at the rate of about 10,000,000 yards of net annually. Seven-eighths of this quantity is produced in France; Calais being the principal seat of the manufacture in that country, and employing more than 700 machines. For keeping these employed, the owners have hitherto been obliged to use yarns smuggled from England,—the French spinners being unable to produce fine yarn strong enough to bear the action of the machines, or sufficiently regular in its size to make good net. The importation of these fine yarns into France has very recently been legalized, (by an ordonnance, dated the 4th of June,) upon payment of a duty of 7 francs per kilogramme,—about 2*s.* 10*d.* per lb.

George Heriot.—This name was hardly known in the southern portion of the island, until Heriot became a prominent character in 'The Fortunes of Nigel.' In the notes to the late edition of that work we are informed, that George was the son of a goldsmith in Edinburgh, and pursued his father's occupation, which was then particularly lucrative, and much connected with that of a money-broker. He enjoyed the favour and protection of King James, as well as that of his consort, Anne of Denmark. He became the goldsmith to the king and the jeweller to the queen, whose account with him for a space of ten years amounted to nearly 40,000*l.* On the accession of James to the crown of England, Heriot followed his royal master to London, and died there on the 12th of February, 1624, at the age of sixty-one years. He had been married twice; but both his wives died before him, and left him childless. Therefore, after making full provision for such of his relations as might have claims upon him, he left the residue of his fortune, which was very large for that period, to establish an hospital for the maintenance and education of indigent children, the sons of burgesses and freemen of Edinburgh. The number depends on the state of the funds, conjointly with the applications for admission. At first only 39 were received, in the year 1659; in 1735, there were 130; in 1778, 110; but, in July, 1814, there were no less than 175. The average expense of maintaining each, including the necessary expenditure of the institution, is about 48*l.* yearly. When youths leave the hospital to follow trades, 50*l.* is paid as an apprentice-fee for them; and those attending an university with a view of preparing themselves for learned professions, are allowed a bounty of 120*l.* Thus there is much liberality practised to promote their welfare. The funds of the hospital are ample; and, as a large proportion is from land in the immediate vicinity of Edinburgh, they have increased wonderfully of late, and are likely to augment still further. At present, the annual revenue is computed at 8500*l.* The hospital in which this charity is maintained is a noble quadrangle of the Gothic order, and as ornamental to the city as a building, as the manner in which the youth are provided for and educated renders it useful to the community as an institution. The intentions of the founder were not carried into effect, by the completion of the edifice, until 1650, at an expense of 30,000*l.*,—a very large sum at that period. Instead of being then applied to its original purpose, Oliver Cromwell, having taken possession of the city, converted the building into a military hospital; but General Monk, several years after, in 1659, withdrew his troops, at the request of the managers, and left it to its original destination.

Suspension Bridges of the Himalaya.—"At some convenient spot, where the river is rather narrow, and the rocks on either side overhang the stream, a stout beam of wood is fixed horizontally upon or behind two strong stakes, that are driven into the banks on each side of the water; and round these beams ropes are strained, extending from the one to the other across the river, and they are hauled tight and kept in their place by a sort of windlass. The rope used in forming the bridge is generally from two to three inches in circumference, and at least nine or ten times crossed to make it secure. This collection of ropes is traversed by a block of wood, hollowed into a semicircular groove large enough to slide easily along it; and around this block ropes are suspended, forming a loop in which passengers seat themselves, clasping its upper parts with their hands to keep themselves steady; a line fixed to the wooden block at each end, and extending to each bank, serves to haul it and the passenger attached to it from one side of the river to the other. "The j'hoola (as the bridge is called) at Rhampore was somewhat formidable, for the river tumbles beneath in a very awful way; and the ropes, though they decline in the centre to the water, are elevated from thirty to forty feet above it: the span is from ninety to a hundred yards. It was amusing enough to see several of our low-country attendants arming themselves with courage to venture on this novel mode of transit; and I must confess that, although it was evident that the actual danger was small, it was not without certain uncomfortable feelings that I first launched out on the machine to cross the Sutlej. We found, however, that accidents sometimes occur; and it was scarcely twelve months since a Brahmin, who had come from Cooloo, having loaded the ropes with too great a weight of his goods, and accompanied them himself, fell into the stream, was hurried away, and dashed to pieces."—*Frazer's Tour through Part of the Snowy Range of the Himalaya Mountains.*

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's-Inn Fields.

LONDON: CHARLES KNIGHT, 22, LUDGATE STREET.

Printed by WILLIAM CLOWES, Duke Street, Lambeth.